
**Vitreous and porcelain enamels —
Glass-lined apparatus for process
plants —**

**Part 2:
Designation and specification of
resistance to chemical attack and thermal
shock**

*Émaux vitrifiés — Appareils émaillés pour les installations
industrielles —*

*Partie 2: Désignation et spécifications de la résistance à l'attaque
chimique et au choc thermique*



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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 28721-2 was prepared by the European Committee for Standardization (CEN) (as EN 15159-2) and was adopted, under a special “fast-track procedure”, by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, in parallel with its approval by the ISO member bodies.

ISO 28721 consists of the following parts, under the general title *Vitreous and porcelain enamels — Glass-lined apparatus for process plants*:

- *Part 1: Quality requirements for apparatus, components, appliances and accessories*
- *Part 2: Designation and specification of resistance to chemical attack and thermal shock*
- *Part 3: Thermal shock resistance*

Introduction

For many materials, the chemical composition can serve as a basis for a specification. This is not possible for chemical enamels because the composition is tied very closely to the specific enamelling technique and is therefore not disclosed by the manufacturer for competitive reasons. In order to ascribe measurable attributes to an enamel besides its general designation, the manufacturer conducts standardized tests and specifies its enamel in terms of the resulting resistance to corrosion and thermal shock, together with a declaration of the structure of the cover coat enamel and the colour of the enamel.

The quality requirements stated in this part of ISO 28721 represent the minimum requirements a chemical enamel is expected to meet based on the current state of the art.

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Vitreous and porcelain enamels — Glass-lined apparatus for process plants —

Part 2:

Designation and specification of resistance to chemical attack and thermal shock

1 Scope

This part of ISO 28721 specifies requirements for the resistance to chemical attack and thermal shock of chemical enamels and their designation for ordering purposes.

It is applicable to enamelled apparatus, piping and other components primarily used for process equipment in chemical plants.

It only applies to unalloyed and low-alloy carbon steels suitable for enamelling.

NOTE The main criteria for assessing enamel quality are the resistance to chemical attack and thermal shock and the structure of the cover coat enamel.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13807, *Vitreous and porcelain enamels — Determination of crack formation temperature in the thermal shock testing of enamels for the chemical industry*

ISO 28706-2, *Vitreous and porcelain enamels — Determination of resistance to chemical corrosion — Part 2: Determination of resistance to chemical corrosion by boiling acids, boiling neutral liquids and/or their vapours*

ISO 28706-4, *Vitreous and porcelain enamels — Determination of resistance to chemical corrosion — Part 4: Determination of resistance to chemical corrosion by alkaline liquids using a cylindrical vessel*

3 Designation

The enamel quality shall be designated by stating the following information:

- the rate of corrosion in hydrochloric acid, determined in accordance with ISO 28706-2;
- the rate of corrosion in sodium hydroxide solution, determined in accordance with ISO 28706-4;
- the crack formation temperature, determined in accordance with ISO 13807;